IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ASSIGNEE:	**RIETER PERFOJET, Montbonnot, FRANCE**
INVENTORS:	**Frederic Noelle et al.**
Serial n°:	**10/529.843**
Filed:	**07.10.2003**
Title:	**LOW-DENSITY NONWOVEN FABRIC AND PRODUCTION, METHOD AND INSTALLATION THEREFOR AND USES**
Examiner:	**M. D. Matzek**
Docket N°:	**3 8 0 3 3**

DECLARATION OF OLIVIER GUICHON

I, OLIVIER GUICHON, hereby declare as follows:

I am an employee of RIETER PERFOJET, Montbonnot, France, the assignee of the above-cited application.

I am presently, and I have been for the past 6 years, a Project Manager in the R&D Division of Rieter Perfojet, specialist for the development of the SPUNBOND technology.

I have studied the present Office Action dated 18/09/2006 in the '843 application, and I am familiar with the prior art cited.

I have carried out the following 2 tests, in the general configuration (Fig. 1 of the above cited application) and the general terms as follows:

- one spunbond unit, with filaments titre of 1.8 dtex and with different inclinations angles, α, of the die, the inclination angle relative to the cross direction;
- the basis weight (B.W.) of the web is 18 g/m^2;
- the number N of the filaments deposed on the conveyor / 1m is calculated as follows for a die with 5000 holes and , α, the die inclination angle:

$$N = 1m * 5000 \ / \cos \alpha$$

- the web of filaments deposed on the conveyor is consolidated, first mechanical, calendered at a pressure of 80 N/mm and at a temperature of 150°C, and then the calendered web is hydroentangled by means of 2 injectors, with water jets

pressures of 250 bars, the water jets diameters of 120 µm, and the distance between the jets of 0.6 mm;

- the final nonwoven was tested for mechanical properties MD (N/50 mm), CD (N/50 mm), and thickness T as described in the above cited application;
- there are calculated: the ratio MD/CD the MD index (N/50mm/g/m²), the CD index (N/ 50mm/ g/ m²) and the density D (g/ cm³) in the Table of results;
- MD index is calculated : MD index = MD / B.W. (basis weight)
- CD index is calculated : CD index = CD / B.W. (basis weight)
- the density D (g/cm³) is calculated: D = B.W. / (T* 1000)
- photos of the final nonwoven are attached for each test

TEST 1 (Comparative test)

The installation comprises a spunbond unit with a die in the normal position, the die's inclination angle, α, is zero degrees relative to the cross direction.

The titre of the filaments is 1.8 dtex, the basis weight of the filaments web is 18 g/m².

The number N of the filaments deposed on the conveyor / 1m is calculated as follows for the die in the normal position, $\alpha = 0°$:

$$N = 1m * 5000 / \cos 0°$$

N = 5000 filaments/ 1m

This means that the same number of filaments exiting from the die is deposed on the conveyor in the cross direction.

The web of filaments is calendered at a pressure of 80 N / mm and a temperature of 150 ° C, and then the calendered web is entangled by means of water jets, 2 injectors, with 1 range of jets, with jets diameter of 120 µm, the distance between jets of 0.6 mm, water jets pressure of 220 bars and the line speed of 210 m/min.

The resulted nonwoven was tested for mechanical properties MD, CD, thickness T, according to the methods described in the above cited application , and the results are in the Table of results.

The ratio MD/CD is calculated 3.88, the MD index is calculated 1.96 N/50mm/g/m², the CD index is calculated 0.50 N/ 50mm/g/m² and the density D is calculated 0.006428 g/cm³ for the thickness of 0.28 mm.

Attached is Photo 1, corresponding to Test 1.

TEST 2

The installation comprises a spunbond unit with an inclined die, the die's inclination angle, α, is 45 degrees relative to cross direction.

The titre of the filaments is 1.8 dtex, the basis weight of the filaments web is 18 g/m².

The number N of the filaments deposed on the conveyor / 1m is calculated as follows for the an inclined die, $\alpha = 45$ °:

$$N = 1m * 5000 / \cos 45°$$

N = 7072 filaments/ 1m

This means that an increased number of filaments exiting from the die is deposed on the conveyor in the cross direction, relative to the installation with a normal inclined die relative to the cross direction (5000 filaments/1m).

The web of filaments is then calendered at a pressure of 80 N / mm and a temperature of 150 ° C, and the calendered web is then entangled by means of water jets, 2 injectors with 1 range of jets, with jets diameter of 120 µm, the distance between jets of 0.6 mm, water jets pressure of 220 bars and the line speed of 210 m/min.

The resulted nonwoven was tested for mechanical properties MD, CD, thickness T, according to the methods described in the above cited application , and the results are in the Table of results.

The ratio MD/CD is calculated 1.23, the MD index is calculated 1.61 N/50mm/g/m², the CD index is calculated 1.31 N/50mm/ g/ m² and the density D is calculated 0.005454 g/cm³ for the thickness of 0.33 mm.

Attached is Photo 2, corresponding to Test 2.

It is an evidence that the nonwoven of Photo 2 (Test 2) has less large "holes" (regions with no filaments) than the nonwoven of Photo 1 (Test 1).

Table

	MD N/50 mm	CD (N/50 mm)	T (mm)	MD/CD	MD index N/50mm/g/m²	CD index N/50mm/g/m²	D g/ cm³
TEST 1	35.34	9.10	0.28	3.88	1.96	0.50	0.006428
TEST 2	29.10	23.53	0.33	1.23	1.61	1.31	0.005454

Conclusion

As we can see from the results, as well as from the attached photos, the effect of the inclined die has as a result a product with increased qualities, like isotropy, excellent uniformity, small density of the final product with very good applicability in the hygiene and filtration fields.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made herein on information and belief are believed to be true; and further, that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

Montbonnot, France 26.01.2007

Olivier GUICHON

(Signature)

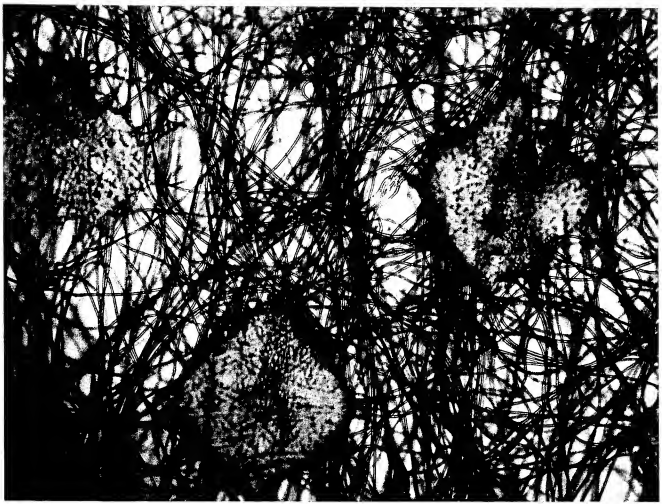

PHOTO 1

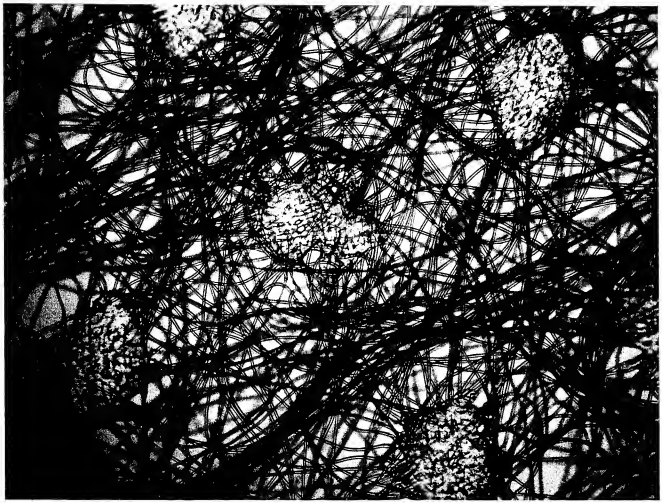

PHOTO 2